Applied Public Policy Research
APPRISE
Institute for Study and Evaluation

MEMO

DATE: November 16, 2006
TO: Jim Grevatt
FROM: Jackie Berger and David Carroll
SUBJECT: Electric Affordability Plan Options

Vermont is considering how to design and implement an electric affordability plan that would benefit low-income customers, while minimizing administrative costs. Act 208, Section 10a, of the 2006 General Assembly requires the Public Service Board to "design a proposed electric affordability program in the form of draft legislation." APPRISE has evaluated several different electric affordability programs and has a comprehensive understanding of potential benefits and drawbacks that may result from different program models. VEIC has asked APPRISE to provide information on electric affordability program models. This memo describes options for designing the program, and provides information on the advantages and disadvantages of program models for achieving several program goals. The memo also describes program reporting and evaluation needs.

I. Program Design Options

Many different electric affordability plan options have been implemented by states and utilities around the nation. These programs differ in terms of administration and participation, benefit determination, and benefit distribution. This section provides a menu of options for the design of a ratepayer-funded low-income energy affordability program. In later sections of this memo, we describe advantages and disadvantages of various program models.

A. Program Administration and Participation

One decision to be made in the design is the level to which the ratepayer-funded affordability program is integrated or coordinated with LIHEAP and other state run assistance programs. We define three levels of coordination.

Integration: One option is to integrate the delivery of LIHEAP and ratepayer-funded benefits. For example, in the NJ USF program, both the program application and the benefit determination are integrated with LIHEAP. There is a joint application for LIHEAP and the USF. In the benefit determination, a three percent energy burden is targeted for electric and gas service, or a six percent burden for electric heating service. When calculating the burden, LIHEAP benefits are subtracted from annual energy costs to obtain the net energy costs. The USF benefit is then calculated so that net energy costs are no more than the targeted percentage of income.

Coordination: Another option is known as “presumptive” or “adjunctive” eligibility. Under this approach, individuals who currently receive LIHEAP could be determined to be presumptively eligible for the ratepayer-funded program, that is they could be given the benefits without submitting a separate application and/or income documentation. This method still allows the ratepayer-funded program to specify a higher income eligibility limit than for LIHEAP, and/or for households to receive the ratepayer-funded program without

receiving LIHEAP. These households, however, would be required to complete an application and provide income documentation for the ratepayer-funded program.

Independence: The third option is to have the LIHEAP and ratepayer-funded programs operate independently of one another. They would require separate applications, and benefits for the two programs would be determined independently of one another.

B. Benefit Determination

Programs that determine the household's benefit level by targeting a particular energy burden must establish a method for calculating or estimating the household's electric costs. Three methods for constructing the costs are using the actual bill, developing an estimated bill, or utilizing the average bill.

Actual bill: The NJ USF program uses the previous year's annual bill adjusted for expected changes in prices as an estimate of the next year's bill. Utilities send cost data electronically to the state administrator who then uses those data to calculate the benefit amount.

Estimated bill: Another option is to use an estimated bill. An estimate bill can be based on state-level averages by household size, heating fuel, geography, and other demographic characteristics. For example, electric heating households with larger family size in the northern most part of the state would have higher average, and therefore higher estimated, bills than those who do not heat with electricity and have smaller families. APPRISE has used Census data to develop average energy costs by fuel, household size, and utility type for New York State's LIHEAP office. The office uses these "proxy costs" to develop benefit levels for households who do not provide actual energy bills. A similar method could be used for Vermont.

Average bill: A third method, as proposed in Vermont, is to use the statewide average bill as an estimate of electric costs for all households in the state.

C. Benefit Distribution

Two different methods for distributing the program benefit are to fix the credit that will be applied to the household's bill or to fix the amount that the household is asked to pay.

Fixed credit: The NJ USF program utilizes a fixed credit approach. Under this model, the state calculates the customer's affordability energy burden as six percent of income. The difference between this calculated affordable energy cost and the customer's predicted energy costs is the program benefit. The annual benefit is divided by 12 to determine the monthly household credit. Each month this credit is applied to the household's bill, regardless of actual energy usage or energy costs.

Fixed payment: The Philadelphia Gas Works Customer Responsibility Program utilizes a fixed payment approach. Under this approach, the customer's discounted energy charge is calculated as eight, nine, or ten percent of income, depending on poverty level. This annual charge is divided by twelve, and each month the customer is charged this amount. In months where the actual cost is higher, the household is receiving a discount, and in months where the actual cost is lower, the household is receiving a negative discount.

II. Program Administration

Two important decisions for program administration are the level of coordination between the ratepayer funded program and LIHEAP, and the method that will be used to determine the benefit level.

Program integration can provide benefits by reducing the administrative costs that are associated with the program. When there is one application process for the two programs, there is one fewer process that has to be implemented. The benefits of this approach are apparent when comparing the administrative costs of the NJ USF and the Customer Assistance Programs (CAP) that are operated independently by each utility in Pennsylvania. The administrative costs of the NJ USF are estimated at approximately three percent of program costs, as compared to the administrative costs of the PA CAPs that averaged 21 percent for electric companies and five percent for gas companies in 2005.

While the actual bill may be the preferred method for calculating energy costs, the use of such data can be challenging if data management and data transfer capabilities have not been developed by the administrator and the utilities. This method requires that utility companies can send electronic data on customer costs to the program administrator.

III. Targeting Benefits

Three different methods for benefit determination discussed above were the use of the actual bill, an estimated bill, or the state average bill. Use of the actual bill may best target benefits and uniformly reduce energy burden. This method ensures that the greatest benefits are provided to those households with the greatest difference between actual and targeted energy burden. Table 1 shows that this method can reduce energy burdens for households with differing gross energy burdens to a targeted level.

Table 1
Demonstration of Bill Calculation Methods

	Household 1	Household 2
Income	$10,000	$10,000
Electric bill	$500	$2000
Gross energy burden	5%	20%

Actual Energy Bill Method		
Targeted 5% burden bill	$500	$500
Benefit	$0	$1,500
Net bill	$500	$500
Net burden	5%	5%

Estimated Energy Bill Method		
Targeted 5% burden bill	$500	$500
Estimated energy costs	$800	$1700
Benefit	$300	$1200

Estimated Energy Bill Method		
Net bill	$200	$800
Net burden	2%	8%

Average Energy Bill Method		
Targeted 5% burden bill	$500	$500
Estimated energy costs	$1000	$1000
Benefit	$500	$500
Net bill	$0	$1500
Net burden	0%	15%

As stated above, however, there are administrative challenges related to the use of actual energy costs. Therefore, an intermediate level of targeting is to use modeled energy costs as a proxy. Energy costs can be modeled with various levels of precision depending on the household demographic data that are collected as part of the application process. This method is administratively less complex, but it does not provide benefits that are as accurately targeted to energy burden level. Table 1 assumes that this method will somewhat overpredict energy costs for the low cost household and somewhat underpredict energy costs for the high cost household. As a result, the low cost household has a net energy burden of two percent after receiving program benefits, and the high cost customer has a net energy burden of eight percent after receiving program benefits.

Vermont is considering the use of a state level average electric cost to calculate the household's gross energy burden. While this method is the simplest approach, it will not do a good job of targeting benefits to households with higher need. Table 1 shows that this method would result in a net energy burden of zero percent for the low cost household and a net energy burden of fifteen percent for the high cost household. This method, therefore, may not do a good job of providing affordable energy bills for households with the greatest costs and the greatest need for assistance.

IV. Usage Reduction Incentives

The various program models that were described above will have different implications for household usage reduction incentives.

A. Benefit Determination

The previous section showed how the use of the household's actual bill provides greater benefits and more equalized energy burdens for households with higher energy usage. It can be argued that this method "rewards" households who do not work hard to conserve energy, as households who used more energy in the past year will receive greater benefits in the following year. However, energy usage relates to individual household circumstances and individual household

need, as well as to energy conservation behavior. For example, a household with a medically necessary device, a household with electric heat and poor insulation, or a household with many members would be expected to use more electricity. Therefore, use of the actual bill also provides greater benefits to those households with the greatest need.

Use of an estimated bill would adjust for some differences in need that relate to household size, geography, or other factors that may be incorporated into the model. However it would not adjust for other specific household differences that cannot be incorporated into the model. The use of an estimated bill would reward households who have lower than average energy consumption given their household characteristics.

B. Benefit Distribution

The fixed credit and fixed payment models also have different implications for usage reduction incentives. The fixed credit model provides a benefit level that is not dependent on current energy usage. Regardless of the household's actual energy usage, the same benefit will be applied to the customer's bill each month. As a result, this method does provide incentives for energy conservation. However, this model does not provide protection for factors that are outside the household's control. If there is an especially cold winter or there is an increase in household size, there will not be an increase in program benefits, despite the increase in need.

The fixed payment model provides the household with a fixed payment level that does not vary with usage. Therefore this type of benefit provides additional protection for the client. Previous studies have shown that the fixed payment model does not lead to increased energy usage. The one exception is where the customer's heating fuel is not subsidized. Without a corresponding benefit for the household's heating source, this method can lead the customer to use electric heat instead of the primary heating source, if the other heating fuel becomes unaffordable. This phenomenon has been observed in other programs that have a fixed payment program on the electric side but no comparable benefit for the heating fuel. It may be especially problematic in Vermont where the majority of households heat with bulk fuels.

V. Program Linkages

There are many potential program linkages that can provide benefits to the ratepayer-funded program participants, including LIHEAP, usage reduction programs, and other social assistance programs.

A. Linkage to LIHEAP

The NJ USF program provides an example for how the ratepayer-funded energy assistance program can be linked to LIHEAP. This linkage can provide advantages for targeting and benefit distribution. If the ratepayer program ignores LIHEAP benefits, customers who receive LIHEAP will pay considerably less than the targeted percentage of income. If the ratepayer program assumes that LIHEAP benefits will be received, customers who fail to apply for LIHEAP will pay considerably more than the targeted percentage of income.

B. Linkage to Usage Reduction Programs

There are benefits to linking the ratepayer-funded energy assistance program with usage reduction programs. To the extent that the ratepayer subsidy is dependent on the household's actual energy usage, the linkage will provide benefits to ratepayers by reducing the subsidy that the household receives. To the extent that the subsidy level is fixed, the usage reduction program will provide further assurance that the household's bill is affordable.

Efficiency Vermont has electric usage data for all residential accounts. A match between the affordability accounts and high usage accounts could identify those with the greatest need. The

Ohio Electric Efficiency Program has used such a method to target their high usage energy affordability program participants, and as a result has achieved high levels of energy usage reduction.

C. Linkages to Other Assistance Programs

Linkages of the payment assistance program to other social services can ensure that eligible and needy households receive program benefits. For example, in NJ households who apply for food stamps are automatically screened for the USF program. This linkage requires that the other program application collect all of the information necessary for the payment program application. There are many other social assistance programs that could also serve as an entry point for the ratepayer-funded payment assistance program.

VI. Program Reporting and Evaluation

Program reporting and evaluation are important components of the program to ensure that benefits are appropriately targeted and that the maximum benefits are achieved from the program investment. Below we briefly describe basic reporting and evaluation components that would benefit any program model.

A. Reporting

Program reports are needed for three purposes: program operations, regulatory oversight, and program evaluation. Data needs for each area are summarized below.

Program operations: This refers to the information that is needed to enroll program participants, set benefit levels, and respond to participant and nonparticipant questions. These data should to be kept in a database that is accessible to program operations staff to resolve questions and/or issues that arise with respect to a specific customer's benefit. The level of information that is required will depend on the program design. Basic information including household name, social security number, contact information, enrollment date, income, household size, and benefit amount will need to be maintained regardless of program design. Programs that are based on actual energy costs and that are integrated with other benefits such as LIHEAP will require additional information.

Regulatory oversight: The administrative entity will have a fiscal responsibility to track the program costs and the components of those costs. Program statistics on participants and the expected benefits to participants are needed to project annual program costs for participant benefits. Information on activities by the program administrator and the utilities in support of program operations are needed to project the administrative costs of the program.

Program evaluation: The program administrator and the utilities will need to report data to be used in the evaluation. Two key types of data would be needed for the evaluation:

- *Program data:* Basic information about the household's participation including enrollment date and benefit levels will be needed.
- *Billing and payment data:* Information on the customer's bills, payments, program credits, and arrearages will be needed. Energy usage data would also be required to evaluate the impact of the program on energy usage. Collections activities and costs would be required to evaluate the impact of the program on utilities' collections activities and costs.

C. Evaluation

There are two key recommendations with respect to the program evaluation, regarding timing of the study and comprehensiveness of the study.

Timing: With the introduction of a new program, an evaluation that starts at the time of program planning and runs through at least the first year or two of implementation is recommended. This approach allows for complete documentation of program goals, design, and implementation strategy. It allows the evaluators to provide feedback as the program is implemented so that midcourse corrections can be made. This timing also provides the most comprehensive picture of why and how the program achieved the results that it had, and what can be expected in the future.

Comprehensiveness: The study should include activities that provide an understanding of all program actors and responsibilities, potential confounding factors, and programs that interact with the new program. It is just as important to understand why a program did or did not accomplish its goals as it is to measure the impacts of the program. The following evaluation activities are recommended.

- *Background research:* Review program documentation and interview program actors to develop a complete understanding of program goals and program design.
- *Needs assessment:* Analyze publicly available data to document the population of customers who are eligible for the program, their energy burdens, and other demographic characteristics.
- *On-site observation:* Conduct on-site observation at the program enrollment site or at a customer call center to understand the questions and problems that customers have had with program enrollment and implementation.
- *Customer interviews:* Conduct interviews with program participants and nonparticipants to determine why households do not participate, whether participants understand the program, whether participants perceive a program benefit, and whether the program has met the needs of participants.
- *Program statistics review:* Review the program database to document program enrollment trends and costs, and demographics of participating customers. Determine whether there are gaps in program participation.
- *Affordability impact:* Analyze utility billing data to document the impact of the program on energy affordability.
- *Payment impact:* Analyze utility billing, payment, and arrearage data to document the impact of the program on payment compliance.

Other evaluation activities that may be desired include the following.

- *Usage impact:* Analyze utility usage data to document the impact of the program on energy usage. Determine whether any changes in usage are correlated with household demographic characteristics.
- *Collections impact:* Analyze utility collections data to document the impact of the program on collections activities and costs.
- *Financial impact:* Analyze administrator and utility costs of program administration and benefits provided. Factor in changes in collections and customer service costs to develop net program cost estimates.

III. Summary

This memo reviewed program design options and the implications of these different options for administration, benefit determination, and usage reduction incentives.

Program administration: Integration with LIHEAP can reduce program costs. There may be administrative challenges to using the household's actual bill to calculate program benefits.

Benefit determination: Use of actual bills ensures that the greatest benefits are provided to those households with the greatest difference between actual and targeted energy burden. However, use of actual bills "rewards" households with greater energy usage. Use of estimated bills does not target benefits as well to those with the greatest energy burdens, but does provide incentives for reduced energy usage. Use of a statewide average bill may not provide affordable energy bills to households with the greatest costs and the greatest need for energy assistance.

Benefit distribution: The fixed credit model provides the same benefit regardless of customer usage, and therefore provides an incentive for usage reduction. However, it does not provide protection for the customer against changes in energy bills. The fixed payment model provides the same payment regardless of customer usage, and does not provide an incentive for usage reduction. However, this method does protect the customer against changes in energy costs. One concern with this model is that it could lead customers to use electric space heaters.

The memo also explored the benefits that could accrue from linking the program with other low-income programs. These benefits included reduced costs, more accurate calculation of household need when LIHEAP is taken into account, and the enrollment of needy households through linkage with other social programs.

Finally, the memo summarized data reporting needs and made recommendations for the design of a program evaluation. Program reporting is needed for program operations, regulatory oversight, and program evaluation. It is recommended that the evaluation begin at the time of program planning, and include activities that will assess both the impacts of the program and why goals were or were not achieved.